Claims

1. A backplane (B), having a plurality of slots (P) for plugging in the modules (M1,M2,M3,...), and an optical waveguide (L) for guiding optical signals, characterized in that the optical waveguide (L) has, in the propagation direction of the optical signals, a number of breaks (U1,U2, U3,...) into which means for coupling the optical signals guided in the optical waveguide (L) in and out can be inserted, and the breaks (U1,U2,U3,...) of the optical waveguide being disposed in such a way that a slot (P) can be assigned a break (U1,U2,U3,...).

2. The backplane as claimed in claim 1, characterized in that an anti-reflection coating is applied to an interface of the break (U1,U2,U3,...) of the optical waveguide (L).

3. The backplane as claimed in one of the claims 1 or 2, characterized in that the optical signals guided in the optical waveguide (L) transmit codes for autoaddressing and/or data for data communication.

4. The backplane according to one of the preceding claims, characterized in that a further optical waveguide is provided into which further means for coupling light in and out can be inserted, one optical waveguide guiding the optical signals in one propagation direction and the other optical waveguide guiding the optical signals in the opposite propagation direction.

5. A module (M1,M2,M3) which can be plugged into the optical backplane (B) and which has means whereby optical signals

guided in an optical waveguide (L) in the backplane (B) can be coupled in and out,

characterized in that the means for coupling light in and out are disposed in such a way that they can be inserted in breaks (U1,U2,U3,...) in the optical waveguide (L), can couple optical signals out of the optical waveguide (L) and can couple optical signals into the optical waveguide (L) in the propagation direction.

6. The module as claimed in claim 5,
characterized in that
- the means for coupling light in and out consist of a first optical waveguide section (WE1) and a second optical waveguide section (WS1) disposed parallel to the first optical waveguide section (WE1),
- one end of the first optical waveguide section (WE1) having an oblique end face embodied in such a way that the optical signals guided in the optical waveguide (L) can be coupled out of the optical waveguide (L) via the oblique end face and fed to an optical receiver (E1) disposed on the module (M1)
- and one end of the second optical waveguide section (WS1) having an oblique end face embodied in such a way that the optical signals transmitted by an optical emitter (S1) disposed on the module (M1) can be coupled into the optical waveguide (L) in the propagation direction via the oblique end face.

7. The module as claimed in claim 5 or 6,
characterized in that the optical receiver (E1) converts the received optical signals into electrical signals and the optical emitter (S1) is controlled as a function of these electrical signals.

8. The module as claimed in one of the claims 5 to 7, characterized in that the optical signals coupled in and out via the relevant means transmit codes for autoaddressing and/or data for data communication.

9. A modular system having a backplane (B) as claimed in one of the claims 1 to 4 and a number of modules (M1,M2,M3,...) as claimed in one of the claims 5 to 8, characterized in that the breaks (U1,U2,U3,...) of the optical waveguides (L) are embodied in such a way that their dimensions in the propagation direction of the optical signals are only slightly larger than the dimensions of the insertable means for coupling light in and out.

10. The modular system as claimed in claim 9, characterized in that attenuating elements are provided for insertion in the breaks (U1,U2,U3,...), the dimensions of the attenuating elements being slightly smaller than the dimensions of the breaks and the attenuating elements having a defined attenuation for the optical signals.

11. The modular system as claimed in one of the claims 9 or 10, characterized in that the modular system is an automation system, one of the inserted modules being a master for the other inserted modules.

12. A method for addressing modules inserted on a backplane of an automation system, wherein the modules implemented as claimed in one of the claims 5 to 8 are connected in series via an optical waveguide of the backplane implemented as claimed in one of the claims 1 to 4, and one of the inserted modules is a master for the other inserted modules

and wherein the master communicates with the inserted modules via the optical waveguide in order to execute the following steps:

- checking and detecting whether an address has been assigned to one of the inserted modules,
- polling the default address of the inserted module to which no address has been assigned,
- assigning a valid address to this module and activating the optical emitter of this module,
- repeating the steps if no address has been assigned to another inserted module downstream.